

REMARKS/ARGUMENTS

The amendment is in response to the Office Action dated April 5, 2005. Claims 1-15 are pending in the present application. Applicant has amended claim 1, and added claims 7-15 with this amendment. Accordingly, claims 1-15 remain pending in the present application. No new matter has been presented.

The 102 Rejections

The Examiner rejected claims 1-6 under 35 U.S.C. §102(e) as being anticipated by Chang et al. (U.S. Patent No. 6,636,077) (“Chang”). Applicant respectfully traverses, and has amended claim 1 for clarification; the amendments are supported throughout Applicant’s specification, e.g., page 4.

Applicant’s claim 1 recites a multiplexer comprising a first input, a first channel coupled to the first input, a second input, a second channel coupled to the second input; and an output coupled to the first and second channels, where the first and second channels can be selected as active or inactive, and a coupling capacitance of only an inactive one of the first and second channels is not coupled directly to the output.

Chang does not disclose or suggest a multiplexer in which a coupling capacitance of only an inactive one of the first and second channels is not coupled directly to the output. In Chang’s circuit of Fig. 2, the channels are coupled directly to the output. For example, the channels Ch0 and Ch1 include transistors 286-288, and 290-292, respectively. All of these transistors are coupled directly to the outputs OUT and OUTB. Thus, the coupling capacitance of these transistors is coupled directly to the output, unlike the invention of Applicant’s claim. Applicant’s invention reduces crosstalk and jitter in a multiplexer by providing no direct

coupling of an active input and non-active input through an output, which Chang does not provide. Applicant therefore believes that claim 1 is patentable over Chang.

Claims 2-6 are dependent on claim 1 and believed patentable over Chang for at least the same reasons as claim 1, and for additional reasons. For example, claims 2 and 3 recite that differential amplifiers (DAFs) are coupled to the inputs and a plurality of transistors is coupled between the DAFs and the output. Chang does not disclose or suggest a plurality of transistors between amplifier and output; Chang's circuit couples the amplifiers (286-288, 290-292, etc.) directly to the output. The Examiner stated that BJTs 286 and 288, and 290 and 292, read on the plurality of transistors; however, BJTs 286-288 and 290-292 form Chang's differential amplifiers, and so cannot be the plurality of transistors of claims 2 and 3. Chang also does not disclose or suggest turning off or on such transistors provided between DAFs and an output as recited in claims 5 and 6.

Applicant therefore respectfully requests that the rejection of claims 1-6 in view of Chang be withdrawn.

The Examiner rejected claims 1-6 under 35 U.S.C. §102(b) as being anticipated by Minegishi (U.S. Patent No. 6,515,518). Applicant respectfully traverses. Minegishi discloses in Fig. 7 a circuit including a differential amplifiers 1A-2A and 1B-2B, transistors 3A-6A and 3B-6B provided between the differential amplifiers and a stage of transistors 31-32, and an output 37-38 coupled to the stage 31-32. Minegishi does not disclose or suggest a multiplexer in which a coupling capacitance of only an inactive one of the first and second channels is not coupled directly to the output, as recited in Applicant's claim 1. In Minegishi's circuit, both channel A and channel B's coupling capacitance are treated identically whether the channels are inactive or

active. Thus, the transistors 1A-2A (channel A) always receive the same isolation from the output 37-38, and the coupling capacitance of the transistors is always coupled to the output in the same way, regardless of whether channel A is active or inactive. Similarly, the coupling capacitance of transistors 1B-2B is coupled to the output 37-38 always in the same way, whether the channel B is inactive or active. Minegishi does not disclose a circuit in which a coupling capacitance of only an inactive one of the first and second channels is not coupled directly to the output. Applicant therefore believes that claim 1 is patentable over Minegishi.

Claims 2-6 are dependent on claim 1 and believed patentable over Minegishi for at least the same reasons as claim 1, and for additional reasons.

Applicant therefore respectfully requests that the rejection of claims 1-6 in view of Minegishi be withdrawn.

The Examiner rejected claims 1-6 under 35 U.S.C. §102(b) as being anticipated by Smetana (U.S. Patent No. 6,211,721). Applicant respectfully traverses. Smetana discloses in Fig. 2 a circuit including a differential amplifiers Q1-Q2, Q3-Q4, etc., coupled to cascode transistors Q49 and Q50, which are coupled to output transistors Q51 and Q52 that are coupled to the outputs Q and QN. Smetana does not disclose or suggest a multiplexer in which a coupling capacitance of only an inactive one of the first and second channels is not coupled directly to the output, as recited in Applicant's claim 1. In Smetana's circuit, the coupling capacitance of all channels is treated identically, whether those channels are inactive or active. Thus, the amplifier transistors Q1-Q2 always receive the same isolation from the output Q and QN by the transistors Q49-Q51, no matter whether Q1-Q2 are active or inactive, so that the coupling capacitance of transistors Q1-Q2 is always coupled to the output in the same way,

regardless of whether that channel is active or inactive. Similarly, the coupling capacitance of the other channels is always coupled to the output 37-38 in the same way, whether those channels are inactive or active. Smetana does not disclose a circuit in which a coupling capacitance of only an inactive one of the first and second channels is not coupled directly to the output. Applicant therefore believes that claim 1 is patentable over Smetana.

Claims 2-6 are dependent on claim 1 and believed patentable over Smetana for at least the same reasons as claim 1, and for additional reasons. For example, Smetana does not disclose or suggest a first plurality of transistors between a first amplifier and output, and a second plurality of transistors between a second amplifier and output as in Applicant's claims 2 and 3; in Smetana, all the amplifiers are connected to the same set of transistors Q49-Q52. Claims 5 and 6 recite that the transistors provided between amplifiers and the output are turned off when particular channels are inactive; in contrast, Smetana discloses that his transistors Q49-Q51 are not turned off based on particular channel inactive status, since these same transistors Q49-51 are used for all the channels.

New Claims

Applicant has added claims 7-15 with this amendment. These claims are supported in Applicant's specification on page 4, for example. Claims 7 and 8 are dependent from claim 1 and believed patentable over the cited references for at least the same reasons as claim 1, and for additional reasons. For example, claim 8 recites that the first and second channels are activated and inactivated using at least one of the plurality of transistors coupled between amplifiers and output, and which is not disclosed or suggested by Chang, Minegishi, and Smetana.

Independent claim 9 recites a multiplexer comprising a first input, a first channel including a first input differential amplifier coupled to the first input and a first plurality of transistors coupled to the first input differential amplifier, a second input, a second channel including a second input differential amplifier coupled to the second input and a second plurality of transistors coupled to the second input differential amplifier, and an output coupled to the first and second plurality of transistors. A selection input provided to the first and second plurality of transistors connects either the first channel or the second channel as active for output, such that a coupling capacitance of only the inactive one of the first and second channels is not coupled directly to the output. This is disclosed in Applicant's specification on page 4, for example. Chang, Minegishi, and Smetana do not disclose or suggest transistors coupled between differential amplifiers and an output, where a selection input provided to the transistors connects either the first or second channel as active, such that the coupling capacitance of only the inactive channel is not coupled directly to the output. Claims 10-15 are dependent from claim 7, supported in Applicant's specification on page 4 and Fig. 2, and are patentable for at least the same reasons and for additional reasons. For example, claims 12-15 recite connections between the plurality of transistors, the differential amplifiers, and the output which are not disclosed or suggested by Chang, Minegishi, and Smetana.

The pending claims are believed patentable over the cited references for reasons similar to those explained above.

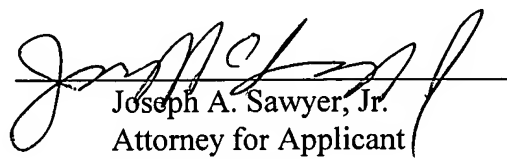
Conclusion

In view of the foregoing, Applicants submit that claims 1-15 are allowable over the cited references. Applicants respectfully request reconsideration and allowance of the claims as now presented.

Applicant's attorney believes that this application is in condition for allowance. Should any unresolved issues remain, Examiner is invited to call Applicant's attorney at the telephone number indicated below.

Respectfully submitted,
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Date


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